

CHROMOSOME NUMBERS IN THE SOUTH INDIAN HELIANTHEAE (COMPOSITAE)

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Abstract

Chromosome numbers of 43 species belonging to 27 genera of the tribe Heliantheae from South India are presented.

Introduction

The tribe Heliantheae is well represented in South India. Hooker (1882) has reported 14 genera from this region. In addition, exotic species of a few other genera have also established, like *Zinnia*, *Montanoa*, *Rudbeckia*, *Tithonia*, *Helianthus*, *Dahlia*, *Cosmos*, *Coreopsis* etc. Karyological studies on 43 species representing 27 genera were made and the results are presented below.

Materials and Methods

Most of the species studied were collected from different low and high altitude regions from Kerala and Tamil Nadu in the South Indian sector of the Western Ghats. Sometimes materials of the same taxon were studied from different localities. Chromosome studies were made from pollen mother cells and/or root tip cells. Chromosome preparations were made by simple acetocarmine (2%) smear and squash techniques. The voucher specimens of the collections were deposited in the herbarium of the Botany Department, University of Kerala. The results are summarized in Table 1, and the taxa are arranged alphabetically.

RESULTS

Table 1. Chromosome Numbers in 43 species of South Indian Heliantheae (Compositae)

Species	n	2n	Source and Voucher	
<i>Acanthospermum hispidum</i> DC.	11	22	Quilon	5011
<i>Bidens biternata</i> (Lour.) Merrill	36	72	Peppara	5058
<i>Bidens triplinervia</i> H.B.K.	12	24	Ootacamund	5065
<i>Blainvillea acmella</i> (L.) Phllllpson	17	34	Trivandrum	5008
<i>Chrysogonum arnottiana</i> C.B. Clarke	17	-	Avalanche	0542
<i>Coreopsis grandiflora</i> Hogg.	12	24	Trivandrum	5044
<i>Coreopsis</i> sp.	11	-	Ootacamund	5049
<i>Cosmos bipinnatus</i> Cav.	12	24	Ootacamund	6078
<i>Cosmos caudatus</i> Kunth	24	48	Quilon	6025
<i>Cosmos sulphureus</i> Cav.	12	24	Trivandrum	5061
<i>Dahlia imperialis</i> Roeszl.	16	32	Ootacamund	5051
<i>Dahlia variabilis</i> Desf.	32+1B	64	Ootacamund	6011
<i>Eclipta prostrata</i> L.	11	22	Trivandrum	6089
<i>Eleutheranthera ruderalis</i> Pirof. ex Bose	15	30	Trivandrum	5041
<i>Galinsoga parviflora</i> Cav.	16	32	Bangalore	5064
<i>Glossocardia bossvallea</i> (L. f.) DC.	15	-	Selam	5098
<i>Helianthus annuus</i> L.	17	34	Trivandrum	6033
<i>Lagascea mollis</i> Cav.	17	34	Coimbatore	5093
<i>Melampodium paludosum</i> H.B.K.	12	24	Trivandrum	6040
<i>Montanoa bipinnatifida</i> C. Koch	19	38	Yercaud	6001
<i>Parthenium hysterophorus</i> Adans.	18	36	Coimbatore	6032
<i>Rubeckia lacinata</i> L.	24	48	Trivandrum	5013
<i>Sclerocarpus africanus</i> Jacq.	11	-	Trivandrum	6091

<i>Sigesbeckia orientalis</i> L.	15	30,60	Kodaikanal	6036
<i>Spilanthes radicans</i> Jacq.	-	72	Wyanad	5047
<i>Spilanthes uliginosa</i> Sw.	25	50	Coimbatore	5001
<i>Spilanthes ciliata</i> H.B.K.	-	72	Vithura	6027
<i>Spilanthes oleracea</i> L.	30	60	Kottakkal	5040
<i>Spilanthes calva</i> DC.	-	72	Munnar	5050
<i>Synedrella nodiflora</i> Gaertn.	-	34,68	Quilon	5012
<i>Tithonia diversifolia</i> Gray	17	34	Ponmoudi	5021
<i>Tithonia rotundifolia</i> Blake	17	34	Coimbatore	6037
<i>Tridax procumbens</i> L.	18	36	Chavara	5005
<i>Verbesina encelioides</i> (Cav.) Benth.	17	-	Cavery	5021
<i>Wedelia trilobata</i> (Linn.) A.S. Hitchc.	30	60	Calicut	6058
<i>Wedelia biflora</i> C.B. Clarke	15	30	Idukki	6054
<i>Wedelia urticaefolia</i> DC.	36	72	Moonnar	5034
<i>Wedelia calendulacea</i> Less.	20	50	Alleppey	5023
<i>Xanthium strumarium</i> L.	18	36	Veli	5076
<i>Zinnia elegans</i> Jacq.	12	24	Trivandrum	5070
<i>Zinnia haageana</i> Regal	12	24	Ootacamund	6006
<i>Zinnia linearis</i> Benth.	11	22	Ootacamund	5099

The chromosome numbers of the species reported here ranged from $n = 10 - 38$, and they conform to an array of basic numbers ranging from $x = 9 - 19$ of which $x = 17$ and 12 predominate. Of the 43 species studied 16 were polyploids at different levels, of which tetraploids outnumbered. Meiosis in most of the tetraploids was normal which is suggestive of their allopolyploid nature. However, abnormal meiosis characterized by multivalent formation resulting in irregular anaphase separation and consequent fall in pollen fertility was noticed in one tetraploid (*Wedelia trilobata*, $x = 15$) and also in the hexaploid *Bidens biternata* ($x = 12$). Intraspecific polyploidy was observed in two species, *Sigesbeckia orientalis* ($2x, 4x$) and *Synedrella nodiflora* ($2x, 4x$). The chromosome numbers observed in most of the species agree with the counts reported from elsewhere (see Robinson et al. 1981), but in a few cases, the reports are new counts.

References

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